

FIGURE 2 illustrates a standing pressure wave in a closed organ pipe;

FIGURE 3 depicts a high-level view of a system implementing the concepts of the present invention;

FIGURE 4 illustrates a preferred embodiment of the present invention;

FIGURE 5a shows a standard forcing function which may be obtained by a prior art system;

FIGURE 5b depicts an input forcing function obtained by use of the concepts of the present invention;

FIGURE 6a shows a standard lamp input current;

FIGURE 6b depicts a lamp input current obtained by use of the concepts of the present invention; and

FIGURE 7 illustrates an alternate embodiment of the present invention.

Please substitute the following amended paragraph for pending paragraph [0012]:

[0012] Using this hypothesis, it has been determined that striations in a lamp can be reduced or eliminated by operating a ballast having an inverter at other than a 50% duty ratio. That is, in a two switch inverter, for example, one switch is configured to operate longer than the remaining switch. As long as this offset in the duty ratio is blocked, such as by a capacitor, no DC current will flow through the lamp's arc. Rather, for example, the positive portion of the of the lamp current cycle will have a shorter duration but a higher amplitude than the succeeding negative portion of the cycle, or vice versa. Consequently, a ballast circuit has been developed which provides an asymmetric input current to the lamp. By altering the symmetry of the current in this manner, the repetitive resonance frequencies which are believed to create the striations are interfered with thereby eliminating the visual appearance of striations.

Please substitute the following amended paragraph for pending paragraph [0013]:

[0013] FIGURE 3 sets forth an exemplary lamp lighting system 20 which incorporates the concepts of the present invention. An input power source 22 supplies power to a ballast 24. Ballast 24 includes an AC-to-DC converter 26 which provides a DC voltage on DC bus 28 which, in turn, provides power to a lamp input current generating circuit

30. The lamp input current generating circuit **30** is configured to generate an asymmetric alternating current on lamp input line **32** that provides power to gas discharge lamp **34**. In one embodiment, the lamp input current generating circuit **30** can be an inverter circuit or portions of the inverter circuit, and will be described primarily with this focus. However, it is to be appreciated that other components and circuits capable of generating or supplying an a symmetric alternating current to lamp **34** may also be used. These additional circuits, which may be represented by block **30** of FIGURE 3, may or may not be part of the inverting circuit. For example, a sub-circuit subsequent to the inverting mechanism can be used to alter asymmetric generated signal into an asymmetric form.

Please substitute the following amended paragraph for pending paragraph [0014]:

Set forth in FIGURE 4 is one embodiment of inverter circuit **30** suitable for incorporating concepts of the present invention. Inverting circuits of this type are well known in the industry and, therefore, the circuit will not be described in great detail except where concepts of the present invention are implemented. The circuit comprises complementary switches **40** and **42**, bipolar junction transistors in this exemplary embodiment. The emitters of switches **40** and **42** are connected in common to a series configured resonant circuit **44** including capacitor **46** and inductor **48**. A blocking capacitor **50** is connected to the remaining end of resonant circuit **44** and is series connected to lamp **34** at node **52** with the remaining end of lamp **34** connected to the junction of capacitor **46** and inductor **48** at node **54**. A feedback inductor **56**, a tap from inductor **48**, is connected to the common emitters of switches **40** and **42** at node **58** with the remaining end of inductor **56** series connected to driving inductor **60** which is connected, in turn to feedback capacitor **62**. The remaining end of feedback capacitor **62** is connected to the base terminals of switches **40** and **42**. A first resistor **64** is connected from the base terminals of switches **40** and **42** to the collector terminal of switch **40** which is also connected to the positive lead of DC bus **28** at node **66**. The collector terminal of switch **42** is connected to ground **68** which is connected to the negative lead of DC bus **28** at node **70**. Driving inductor **60** is bridged by output clamping circuit **72** comprising back-to-back, series connected zener diodes **74** and **76**. Capacitor **78** bridges resonant circuit **44**, and resistor **80** is connected between node **58** and ground **68**. Reverse-

conducting diode 82 bridges the emitter and collector terminals of switch 40, with the cathode of diode 82 connected to the collector terminal of switch 40. Reverse-conducting diode 84 bridges the emitter and collector terminals of switch 42, with the anode of diode 84 connected to the collector terminal of switch 42. A preferred method of producing asymmetry in the lamp input current for the circuit illustrated in FIGURE 4 is to configure switches 40 and 42 with mismatched h_{FE} (commonly called beta). This causes the transistor with a lower h_{FE} to conduct for a shorter period of time, thereby causing the on time of switches 40 and 42 to be asymmetrical. That is, one BJT will conduct for a shorter period of time than the other will.

Please substitute the following amended paragraph for pending paragraph [0015]:

[0015] FIGURE 5b shows an asymmetrical forcing function 86 of the present invention compared to a typical symmetrical forcing function 88 of FIGURE 5a of prior art ballast inverters. The forcing function is a voltage as measured from node 58 with respect to node 52 in FIGURE 4. The particular forcing function shown is configured to have a short positive duration and a long negative duration. The positive and negative durations can be reversed with equal efficacy.

Please substitute the following amended paragraph for pending paragraph [0016]:

[0016] FIGURE 6b illustrates the effect of asymmetrical forcing function 86. Asymmetrical load current 90, measured as the current flowing from node 54 to node 52, and can be compared to a symmetrical load current 92 shown in FIGURE 6a. The positive portion of the asymmetrical current cycle is of shorter duration than the negative portion of the cycle, however, the positive portion is of a higher amplitude than the negative portion. Symmetrical load current 92, however, shows equal positive and negative durations, and equal positive and negative amplitudes. There is no DC component to asymmetrical load current 90 because DC current is blocked by blocking capacitor 50.

Please substitute the following amended paragraph for pending paragraph [0018]: